# *ENGINE TEST FACILITY*
## *Propulsion Development Test Cell T-11*

Engine Test Facility (ETF) - Propulsion Development Test Cell T-11 is located at Arnold Engineering Development Center, Arnold Air Force Base, Tennessee. The T-11 is an altitude test cell used to perform cruise missile, unmanned aerial vehicle, and small turbojet engine tests. It is primarily used to conduct performance (steady-state and transient), operability (full flight envelope, air starting and windmill/starter assist, transients, and customer bleed/power extraction), compatibility (inlet distortion, alternate fuels, and water ingestion) tests.

# *PROPULSION DEVELOPMENT TEST CELL T-11*

**Test Cell Dimensions:**
Length: 17 ft
Width: 9.5 ft
Height: 9.5 ft

**Environmental Capabilities:**
Altitude (ft): Sea Level to 80,000
Total Pressure (psia): up to 29.5 at the air inlet to the test cell
Total Temperature (°F): -65 to 220
Airflow (lb/sec): 75 (min. airflow at -65°F is 3 lbs/sec)
Fuel Conditioning System (°F): -65 to 160

**Soak Capabilities:**
Maximum Temperature (°F): 220
Minimum Temperature (°F): -65

**Power Absorption:**
Generator Load Bank has a maximum load of 11 Hp and a minimum load of 0 Hp.

**Data Processing Capabilities:**
ETF data processing capabilities provide pre-test, test, and post-test data reduction and analysis. General programs are available for processing data acquired by the digital data acquisition system. These programs calculate calibration factors, convert raw data to engineering units, calculate performance analysis parameters, generate hard copy tabulations and plots, provide interactive alphanumeric and graphics displays, and supply inputs for special-purpose processing programs. New programs may be developed as needed to meet specific test-unique data reduction and analysis requirements. In addition to real-time displays, data available for analysis / review during testing include all steady-state condition parameters and selected portions of time-dependent parameters. General data reduction programs are available for off-line processing of data recorded in the form of frequency-analog signals.

**Unique Features:**
T-11 can support simulated mission testing (5 to 8 hour mission plan).

**INSTRUMENTATION CAPABILITIES:**

| **Steady State** | **Temperature** | **Pressure** |
|---|---|---|
| Number of Channels: | 176+ | 384+ |
| Range: | -300 to 2500°F/Varies | 5 to 500 psia |
| Sampling Rate | -------10+ samples/sec/channel------- | |

| **Transient** | **Temperature** | **Pressure** | **Vibrations** |
|---|---|---|---|
| Number of Channels: | 176+ | 40+ | 6 |
| Range | -300 to 2500 °F | 15 to 5000 psia/variable | Varies |
| Sampling Rate: | -------25+ samples/sec/channel------- | | |

*For more information on Engine Test Facility - Propulsion Development Test Cell T-11 at Arnold Engineering Development Center, Arnold Air Force Base, TN, contact 615-454-5851.*